Status of CDF dCache-based Analysis Diskpool

Grid & Data Management
February 28, 2006

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dCache-based Analysis Diskpool: Overview

- **present situation**
  - ⇒ **120 TB of disk space managed by physics groups for ongoing analyses**
    - ⋆ **short-term staging for collection/concatenation/validation**
    - ⋆ **storage of analysis-specific files**
  - ⇒ **large number of file servers with static disk areas**
  - ⇒ **data cataloged on web pages maintained by physics groups**
  - ⇒ **disks accessed via specialized version of rootd**
- **proposed solution:**
  - ⇒ **replace majority of "static project disk" with dCache-based diskpool**
    - ⋆ **product support by Fermilab**
    - ⋆ **global namespace simplifies cataloging, monitoring**
    - ⋆ **maintenance, resource re-allocation w/o disruption**
    - ⋆ **scalable and configurable file serving capability**
    - ⋆ **client analysis software already designed to use for system**

Current Hardware Setup

- **administrative nodes**

node	CPU's	RAM	comment
fcdfrdc2	4×3066 MHz	4 GB	pnfs server
fcdfrdc3	4×3066 MHz	4 GB	door hosting server
fcdfrdc4	4×3066 MHz	4 GB	main dCache server
fcdfrdc5	4×2666 MHz	2 GB	monitoring node

- **pool nodes**

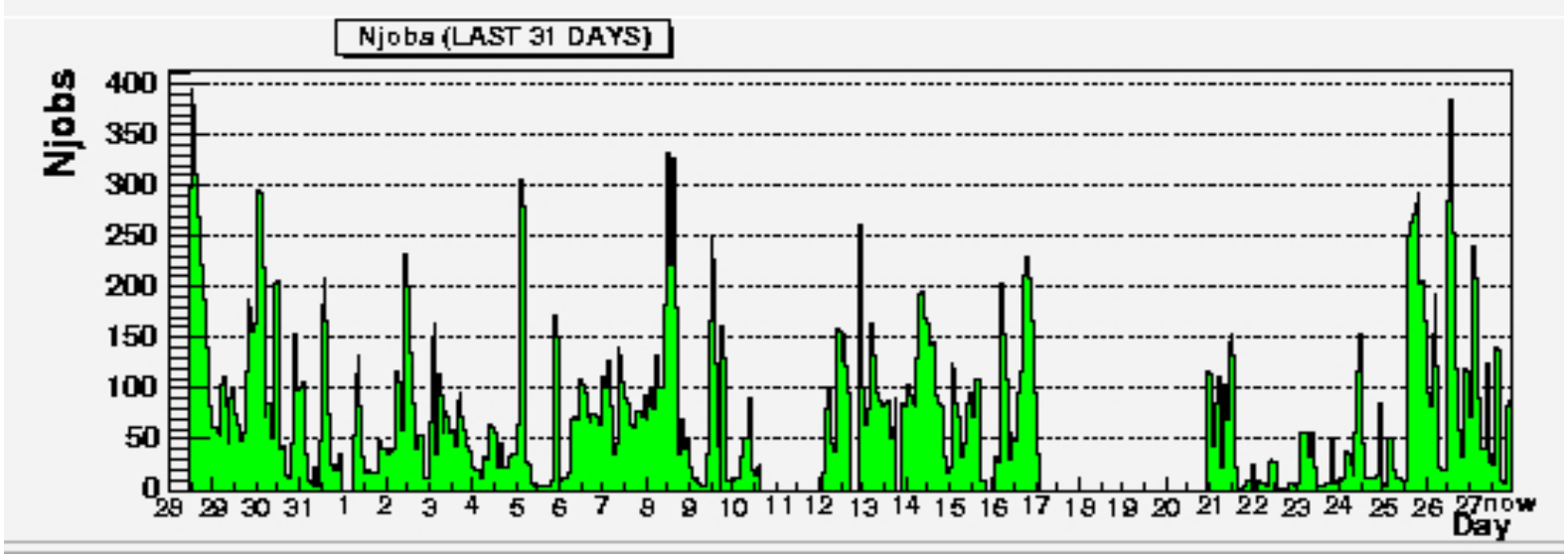
node	CPU's	RAM	disk space
fcdfdata012	2×1393 MHz	2 Gb	2 TB
fcdfdata034	2×1396 MHz	2 Gb	2 TB
fcdfdata039	2×1393 MHz	2 Gb	2 TB
fcdfdata040	2×1393 MHz	2 Gb	2 TB
fcdfdata119	4×3066 MHz	4 Gb	7 TB
fcdfdata126	4×3065 MHz	4 Gb	8 TB
fcdfdata140	4×3202 MHz	4 Gb	15 TB
fcdfdata141	4×3202 MHz	4 Gb	15 TB
			53 TB

Current Usage

- file namespace partitioned into 7 dedicated pool groups

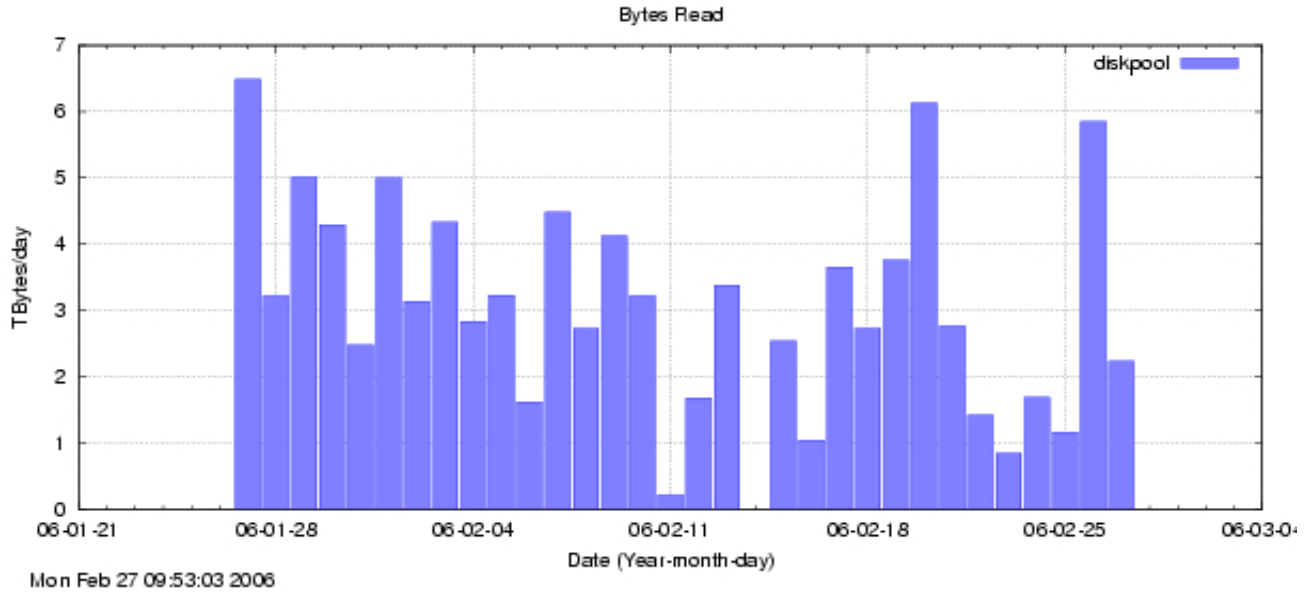
  ⇒ 6 analysis groups plus 1 test pool

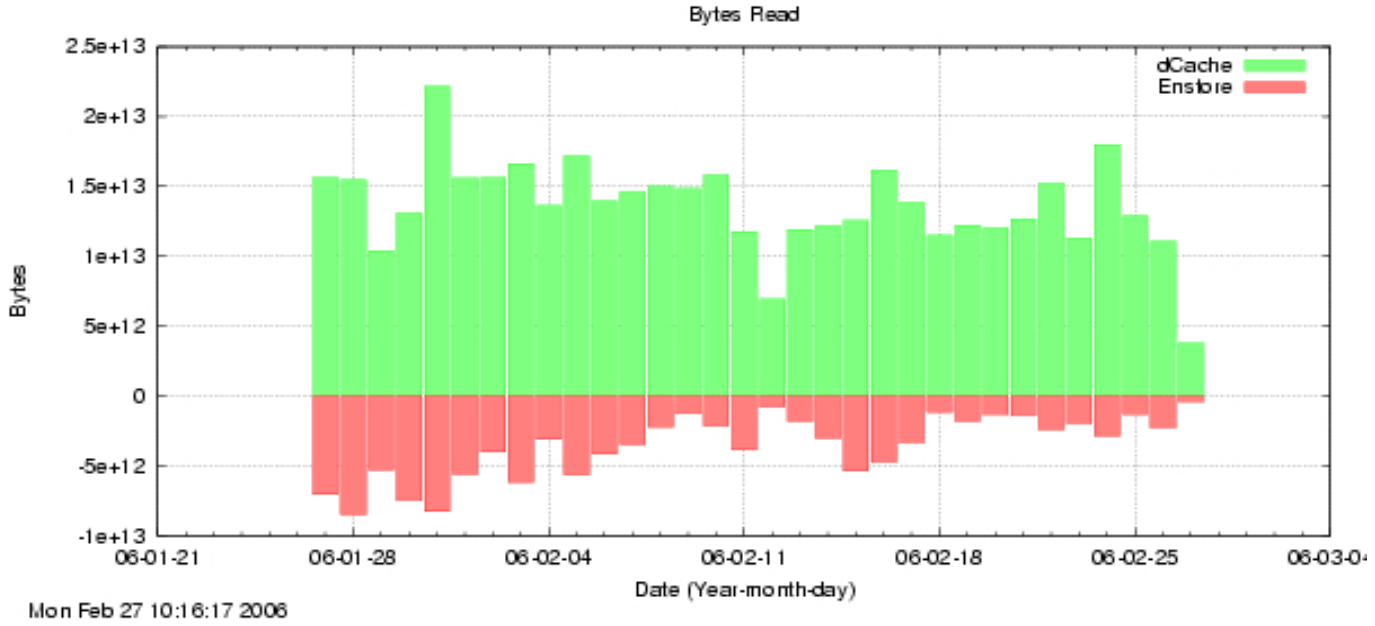
group	assigned	available	used
stn	20 TB	3.4 TB	83%
ewk	7 TB	2.5 TB	65%
top	5 TB	3.2 TB	35%
qcd	5 TB	1.5 TB	73%
bnt	1.6 TB	1.4 TB	12%
exo	1.8 TB	1.8 TB	0%



Current Usage

- **TB read per day (Jan 27 to Feb 27, 2006)**





Status of Deployment

- **deployment plan**
  - ⇒ **Phase 1: prototyping, testing, and understanding performance**
  - ⇒ **Phase 2: pre-production**
  - ⇒ **Phase 3: production operation**
- **Phase 1 goals for 50 TB system**
  - ⇒ **understand characteristics/performance of system**
    - ⋆ **test functionality, load, scalability; investigate failure modes**
    - ⋆ **develop automatic monitoring (based on production dCache system)**
  - ⇒ **understand use cases and system requirements**
    - ⋆ **recruit and train power users**
    - ⋆ **develop usage rules (minimum filesize, prohibit tar, unzip, ls, ...)**
    - ⋆ **estimate how system load will scale with additional users**
  - ⇒ **develop specs for production hardware for Phase 2 ($\sim$100 TB)**
  - ⇒ **develop support agreements for Phase 2**
    - ⋆ **primarily from CDF collaboration, expert help from CD**
  - ⇒ **hold pre-production readiness review**